What is claimed is:

1. A metal collector foil for an electric double layer capacitor, comprising:

an etched metal collector foil having an oxide film in an amount not greater than 300 mg/m^2, and a capacitance per unit surface area not less than 150 μF/cm^2.

2. The metal collector foil according to claim 1, wherein the etched metal collector foil is free from a dielectric layer formed by an anodic formation process on a surface of the etched metal collector foil.

3. A method of producing a metal collector foil for use in an electric double layer capacitor, comprising the steps of:

preparing a plain metal foil;

etching the metal foil in a chloride solution to dissolve a surface of the metal foil; and

controlling the growth of an oxide film on the surface of the etched metal foil and the capacitance per unit surface area of the etched metal foil concurrently and separately such that the amount of the oxide film is not greater than 300 mg/m^2, and the capacitance per unit surface area is not less than 150 μF/cm^2.

4. The method according to claim 3, wherein the etched metal collector foil is free from a dielectric layer formed by an anodic formation process on the surface of the etched metal collector foil.

5. An electric double layer capacitor comprising:

a positive electrode and a negative electrode each having a metal collector foil and an electrode material formed mainly from activated carbon and bonded to both opposite surfaces of the metal foil;

a dielectric separator disposed between the positive and negative electrodes; and

a liquid electrolyte impregnated in the electrode material to enable charging and discharging of the electric double layer capacitor,

wherein the metal collector foil is an etched metal foil having an oxide film on the opposite surfaces thereof, the amount of the oxide film, immediately before the bonding of the etched metal foil relative to the electrode material, is greater than 300 mg/m^2, and a capacitance per unit surface area of the etched metal foil, immediately before the bonding of the etched metal foil relative to the electrode material, is not less than 150 $\mu F/cm^2$.

6. The electric double layer capacitor according to claim 5, wherein the etched metal collector foil is free from a dielectric layer formed by an anodic formation process on the surface of the etched metal collector foil.

7. A metal collector foil for an electric double layer capacitor, comprising:

an etched metal collector foil having been subjected to an etching process in an etching solution having a chlorine iron such that a capacitance per unit area of the etched metal collector foil obtained when the etched metal collector foil is subjected to an anodic formation process with application of a withstanding voltage of 65.5 volts is in a range of 1.7 to 2.3 $\mu F/cm^2$, the etched metal collector foil having a tensile strength not less than 9,000 N/cm^2 and a residual chlorine concentration not greater than 1.0 mg/m^2.

8. A method of producing a metal collector foil for use in an electric double layer capacitor, comprising the steps of:

preparing a plain metal foil;

etching the metal foil in an etching solution having a chlorine iron such that a capacitance per unit area of the etched metal collector foil obtained when the etched metal collector foil is subjected to an anodic formation process with application of a withstanding voltage of 65.5 volts is in a range of 1.7 to 2.3 μ F/cm^2, and the etched metal collector foil has a tensile strength not less than 9,000 N/cm^2; and

washing the etched metal foil to the extent that a residual chlorine concentration of the etched metal foil is not greater than 1.0 mg/m^2.

9. The method according to claim 8, wherein the metal foil is a plain aluminum foil, the etching is carried out at a temperature of 40 to 50℃ in a 5% hydrochloric acid solution with an AC current applied at 50 Hz with an electrolytic current density of 0.25 A/cm^2 and the quantity of electricity 35 to 40 A· min/dm^2, and the washing is carried out at a temperature of 50℃ in a pH1 acid solution for 60 seconds.

10. An electric double layer capacitor comprising:

a positive electrode and a negative electrode each having a metal collector foil and an electrode material formed mainly from activated carbon and bonded to both opposite surfaces of the metal foil;

a dielectric separator disposed between the positive and negative electrodes; and

a liquid electrolyte impregnated in the electrode material to enable charging and discharging of the electric double layer capacitor,

wherein the metal collector foil is an etched metal collector foil having been subjected to an etching process in an etching solution having a chlorine iron such that a capacitance per unit area of the etched metal collector foil obtained when the etched metal collector foil is subjected to an anodic formation process with application of a withstanding voltage of 65.5 volts is in a range of 1.7 to 2.3 μ F/cm^2, and the etched metal collector foil has a tensile strength not less than 9,000 N/cm^2 and a residual chlorine concentration not greater than 1.0 mg/m^2.

11. A metal collector foil for use in an electric double layer capacitor, comprising:

an etched aluminum foil formed from a plain aluminum foil of an ordinary degree of purity not greater than 99.8%, the etched aluminum foil containing at least one of Cu, Ni, Zn, Sn and Fe with a content of Cu, Ni, Zn or Sn not greater than 10 ppm and a content of Fe not greater than 300 ppm.

12. The metal collector foil according to claim 11, wherein the purity of the aluminum foil prior to etching is about 99.63-99.66%.

13. A method of producing a metal collector foil for use in an electric double layer capacitor, comprising the steps of:

preparing a plain aluminum foil having an ordinary degree of purity not greater than 99.8% and containing at least one of Cu, Ni, Zn, Sn and Fe; and

etching the plain aluminum foil in a hot solution of 5% hydrochloric acid to thereby obtain an etched aluminum foil of an aluminum content of not greater than 99.8% and containing at least one of Cu, Ni, Zn, Sn and Fe with a

content of Cu, Ni, Zn or Sn not greater than 10 ppm and a content of Fe not greater than 300 ppm.

14. The method according to claim 13, wherein the plain aluminum foil contains about 99.63-99.66% aluminum and at least one of Cu, Ni, Zn, Sn and Fe with a Cu content not greater than 23 ppm, an Ni content not greater than 17, a Zn content not greater than 18 ppm, an Sn content of not greater than 19 ppm and an Fe content not greater than 348 ppm.

15. An electric double layer capacitor comprising:

a positive electrode and a negative electrode each having a metal collector foil and an electrode material formed mainly from activated carbon and bonded to both opposite surfaces of the metal foil;

a dielectric separator disposed between the positive and negative electrodes; and

a liquid electrolyte impregnated in the electrode material to enable charging and discharging of the electric double layer capacitor,

wherein the metal collector foil is an etched aluminum foil formed from a plain aluminum foil of an ordinary degree of purity not greater than 99.8%, and the etched aluminum foil contains at least one of Cu, Ni, Zn, Sn and Fe with a content of Cu, Ni, Zn or Sn not greater than 10 ppm and a content of Fe not greater than 300 ppm.

16. The electric double layer capacitor according to claim 15, wherein the purity of the aluminum foil prior to etching is about 99.63-99.66%.